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AUTHOR Gregory, Tom
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ABSTRACT

Since 1970, essentially all research favors the creation of small high schools. Four forces that have contributed to the growing obsolescence of large, comprehensive high schools are the onset of the information age, the emergence of an adolescent culture, the students' rights movement, and changing attitudes about the proper functioning of organizations. Two reform responses have emerged: breaking up existing big high schools into small schools within schools (SWASs) and creating new, small high schools. The two alternatives represent very different models of schooling with very different cultures. Successful examples of the SWAS approach are rare. Five types of error committed in designing them are errors of size, continuity, autonomy, time, and control. As a result, they rarely get much smaller than 400 students, the minimum size at which the familiar top-down hierarchy that accompanies big buildings still works. However, a smaller size is necessary to enable significant changes in teaching and learning. This is evidenced by the success of the new, small high schools, which diminishes when they get much larger than 200 students. Thus, there is a no-man's-land of school size between 200 and 400 students in which neither the factory model nor new forms of schooling work. School districts should foster ongoing conversations among like-minded teachers, parents, and students to develop new visions of the high school. As enrollments grow, they can trigger the piecemeal construction of small buildings that allow each group to realize its vision. (Contains 58 references.) (TD)

School Reform and the No-Man's-Land of High School Size¹

Tom Gregory
Indiana University

GREGORY@Indiana.edu

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Abstract

The paper explores the ways in which research and practice have shaped how we think about the proper size of the high school. Since 1970, essentially all research tends to favor the creation of small high schools. Four forces seem to have come into play much more strongly, often in concert with each other, since our conception of the high school was established; the information age, the emergence of an adolescent culture, the students' rights movement, and our changing views of the proper functioning of organizations all threaten to render the large, comprehensive high school obsolete.

Two reform responses to these conditions have emerged: break existing big high schools up into small schools within schools (SWASs) and create new, small high schools. The two alternatives represent very different models of schooling with very different cultures. Successful examples of the SWAS approach are rare, perhaps non-existent. Five types of error are often committed in designing them: errors of size, of continuity, of autonomy, of time, and of control. Creating new, small high schools is an effective approach but their effectiveness begins to diminish when they get much larger than 200 students. SWASs also seem to hit a size barrier when they try to get much smaller than 400 students. This no-man's-land of high school size is discussed and its implications for reform efforts are considered. The analysis attempts to explain why so little of our widespread effort to reform the high school has been successful and it suggests remedies, uncomfortable as they may be, that hold the promise of rectifying the situation.

¹Portions of this paper are adapted from an unpublished paper, *School Size, School Reform, and the Moral Conversation*, which I delivered at the Journal of Curriculum Theorizing Conference held in Bloomington, Indiana, October 18, 1997.

In 1970, Meeker and Weiler reviewed the research on school size for the Ford Foundation and recommended that we strive to achieve "fairly sizable" high schools of 2,600 students, at least in urban settings. Even today many would not find their recommendation particularly startling or contrary to common practice; in many quarters bigger is still equated with better. What is notable about Meeker and Weiler's review of school size factors, now three decades old, is that it is the *last* instance I can find in the literature of *researchers* endorsing very large high schools. Yet, in those ensuing 30 years, high schools have continued to grow in size.

Several reasons for this disparity are identifiable. The high school, particularly, plays a far more complex role in its community than do other schools; reformer Ted Sizer calls it a "diabolically complicated system" (1996, p. xi). The high school is far more than simply a place of learning; it may be one of the few entities that unifies a community; it is likely a source of community pride and a central gathering place. As communities grow, they must choose between creating a second high school or increasing the size of the existing school. More often than not, they choose the latter course, often for quite understandable reasons, few of which have anything to do with teaching and learning. An appropriate parcel of land—the law may require it to be 10 to 15 acres in size—for an additional school may not be available or affordable. Communities often see expanding one big high school as a way to maintain a unified community, or to avoid exacerbating the logistics of racial integration, or—as one school I've examined claimed—to maintain one top-flight orchestra rather than create two mediocre ones. Then, too, the highly-competitive athletic teams, still effective unifiers of increasingly disparate student bodies, that will almost surely accrue from this strategy are an attractive if unmentioned byproduct of these decisions.

But, in part, communities make these decisions because of how we have come to think of the proper size of a high school. David Tyack, first with William Tobin (1994) and then with Larry Cuban (1995), has described how both lay and professional people's deep-seated notions of what constitutes a proper school have affected efforts to reform education. They discuss how practices such as age-graded classrooms "structure schools in a manner analogous to the way grammar organizes meaning in language" (1994, p. 454). One need only observe a group of children playing school to note how early the universal concept of teacher as information-giver and disciplinarian is imbedded in our psyches. To teach differently than we have been taught requires conscious effort; we are really changing who and what we *are*. We need to examine our notions of proper school size every bit as critically. Because research as well as practice has influenced the construct, we need to examine that research to understand its role in how we have come to think about the proper size of high schools.

A large and increasingly consistent body of research suggests that we should be moving, not toward larger high schools, but expeditiously toward smaller ones. Even the popular literature of the past few years has been sprinkled with articles extolling the virtues and successes of small schools. Size, of course, has little direct effect on how schools function. It is a set of mediating variables that have the direct impact, or at least a much more direct impact, to which we should direct our attention. Why, for example, are big high schools such intractable institutions, so impervious to even sophisticated, long-term reform efforts? Even Ted Sizer, long on the record as saying that we *must* figure out how to reform the schools we have, seems to have begun to question whether large high schools *can* be reformed (see his 1996 book, *Horace's Hope*).

What the Research Says

Research on school size is relatively easy to summarize. The preponderance of it has examined high schools, the level of education that has experienced the most impact because of increasing school size. Some research—10 percent is probably a reasonable estimate—has examined elementary schools but some of it

is difficult to interpret because it often includes grades seven and eight. The middle school, as so often seems the case, is again the forgotten stepchild when it comes to research on school size; little research exists for this level. The results of school size research are also fairly easy to summarize. The earlier the research, the more likely that it favors large schools; the more recent the research, the more likely that it favors small schools (or calls into question the interpretations of earlier research). As late as 1984, Ted Sizer could with some accuracy state that "The evidence about size of school is inconclusive" (p. 254). The review of research he based his generalization on had been published just two years earlier (ERIC Clearinghouse on Educational Management, 1982). But an examination of that review suggests that the older-studies-favoring-large-schools; newer-studies-favoring-small-schools dichotomy was already apparent. Wheatley (1999) describes our propensity to value all information, both older and newer, equally. She points out that there are likely qualitative differences between these bodies of ideas.

We live in a society that believes it can define *normal* and then judge everything against that fictitious standard. We struggle to smooth out the differences, conform to standards, measure up. If we aren't looking for differences, we can't see that anything has changed; consequently, we aren't able to respond. (p. 100)

Sizer's reform work over time presents the school size issue in microcosm. In *Horace's Compromise* (1984) he barely mentions school size, relegating the above discussion to an endnote. In sharp contrast, in *Horace's Hope* (1996), after an additional 12 years of trying to change big schools and observing the impressive successes of some new, small schools, he makes several strong statements favoring a move to a much smaller scale. I take Sizer's conversion—in a comparatively short time—as evidence of how critical the concept of small size has become to the general effort to reform the high school.

The research on high school size might be thought of as falling into four forms: early sociological discussions, studies of school costs (input studies), ethnographic portrayals and observations of what is going on in schools (process studies), and studies examining achievement and graduation rates (output studies). Because each form is in part a product of the kinds of data and methodologies that were available in a specific era each form may, to a degree, also be thought of as an historical phase.

The Deficits of Rural Life

The first form the school-size research took occurred in the twenties and thirties and was both sociological and speculative in nature. While much of the country had become urbanized it still contained, in 1930, over 130,000 one-room schoolhouses (Tyack and Cuban, 1995). Portions of rural America had not yet been electrified and educators' concerns centered on the living conditions of teachers and the problems of attracting a well-educated teaching force to remote communities. These issues, which were all exacerbated by the great depression and the general tenor of the times, are captured well in a special issue of the *Phi Delta Kappan* (1937) which was devoted entirely to the topic. Already, consolidation was beginning to be pushed as a solution to rural America's education problems. Larger schools needed to be constructed closer to population areas with their cultural advantages so that they might attract a strong teaching force. Indeed little of the positives of rural life are evident in the writings of the time. Rural America's deficits had taken center stage and would remain there for decades to come. New, big high schools with swimming pools and science laboratories that achieved college standards were seen as being superior in every way to old small schools with almost no specialized facilities of any quality. Only the intervention of World War II slowed the reification of this bright vision of the modern American high school.

Input Studies

Researchers' work has always been influenced by the nature of the data and the tools that were available to them. Thus, it was natural that research on school size might turn in its second phase to an examination of cost factors. Really it might be said to have been the other way around; as researchers in the fifties and sixties began examining some of the only school data available to them on a large scale—financial data—they naturally came to look at those data in terms of school size, another set of numbers available to them. As computers became more commonplace both the frequency and size of these input studies accelerated. But few of the huge schools that would be fostered by this research existed at the time that the widely-held axiom of the early sixties, bigger is better, came into popularity. What was "big" in these comparisons would probably be viewed as "moderately-sized" just a decade later. But the research, which may have oversimplified a long list of complex relationships, definitely suggested that bigger schools were more economical than smaller schools.

As the number of very large high schools grew during the sixties and seventies some researchers began to consider whether diseconomies of scale had begun to take hold (Cohn, 1975). The bigger is better axiom was shown to have its limits. After reviewing cost studies Cohn concluded that the optimum size of a high school based on a combination of quality factors and financial criteria, was 1653 students. Some practitioners were beginning to suggest that cost differences between large and small schools were so small that we should be basing our school design decisions on more critical variables such as achievement. For example, an interpolation of the data provided by Cohn (see Table 1) indicates that a high school of 750 students would only be 18 percent less cost-efficient than his optimized school of 1653 students, a cost increase that would seem justifiable to many were it to produce the sort of visible gains that are suggested in this review. But in 1975 few would think that a high school of 1600 might be less desirable than a school half that size; consequently one wasn't likely to consider whether the additional money was a worthy expenditure.

Table 1:
Cohn's Adjusted Costs for Selected School Sizes

School Enrollment	Adjusted Unit Costs
100	372.84
500	314.73
750	290.50*
1000	266.25
1500	244.63
1653	238.09
1750	242.88
2000	249.90
3000	340.90

* This row of the table is my interpolation of the two adjacent rows and is therefore only an approximation. The drop from 1653 to 750 represents an 18% reduction in cost efficiency from Cohn's optimum size. The drop from 1653 to 500 represents a 24% reduction.

More recent literature fails to even support the generalization that big high schools cost less than small high schools. Stiefel, Berne, Iatarola, and Fruchter (2000)² reviewed many of these recent studies of school costs (Chabotar 1989; Watt, 1980; Callan and Santerre, 1990; Kumar, 1983; Bee and Dalton, 1985 (all as cited in Stiefel, et al. (1998, 2000))) and found the consistency of early studies (small is more expensive) not in evidence. Not one of the studies "found a direct (positive) relationship between size and average costs for schools with enrolments *under* 900" (p. 30 of the 2000 citation, emphasis added). Recent output studies, including Stiefel and her colleagues', have been less likely to assume that bigger is necessarily better. Some have begun to examine cost issues in new ways, a topic to which we'll return later in this short review.

Process Studies

Most of the research that has assumed this form³ is recent, a welcomed byproduct of educational researchers' recent emphasis on so-called qualitative approaches including standard observation, participant observation, and ethnography. It also contains the effort to understand how curricular offerings change—or perhaps more accurately, don't change—as schools become bigger.⁴ Research of this type includes assessments of social climate in schools of varying size (for example, my work with Gerald Smith (1983, 1987a, and 1987b). And it certainly includes the comparatively recent studies on the working conditions and job satisfaction of teachers (Johnson, 1991; Rosenholtz, 1989; Lecompte & Dworkin, 1991; and Wasley, Fine, Gladden, Holland, King, Mosak, & Powell (2000). Indeed, Johnson's first recommendation after studying the working lives of 115 reputedly very good teachers in a wide variety of public and private settings, was that "schools must be smaller" (p. 247). After looking at the social climates of schools of all sizes in 22 states Gerald Smith and I (Gregory and Smith, 1987a) came to view small high schools as being good places for teachers, a point remade a few years later by Seymour Sarason in his influential book, *The Predictable Failure of Educational Reform* (1990). In almost every respect all this research favors very small high schools. They meet the needs of their students better than large schools, their practices align better with what their students and teachers view as an ideal school, and they support good teaching better than large schools do. The profession is losing its ability to hold good people to the point where the under-supply of qualified teachers threatens to reach crisis proportions. The detrimental conditions of teachers' work is a central contributor to teaching's growing undesirability. Very small schools appear to be one appropriate response to the problem.

Two early examples of this form of research are landmarks of the genre. In *The American High School Today* (1959), James Conant concluded that the size of a high school graduating class needed to be at least 100 students to offer a broad enough curriculum to prepare students for college. That recommendation equates to a four year high school of 400 to 500 students, what most people today would call a small school. Yet, in the ensuing decades, Conant's book has been given the credit (and more recently the blame) for the major increase we have experienced in the size of high schools. His recommendation regarding size, stemming from a study to which so much bigness has been attributed, would be considered modest in the context of today's practices—perhaps another artifact of how our thinking about school size has changed in a relatively short time—and, even in 1959, could hardly be termed a ringing endorsement of big high schools.

²An earlier version of this article also appeared on line (Stiefel, Iatarola, Fruchter, & Berne, 1998).

³Were I to be true to the cybernetic heritage of my category system, I would term this form of research "Throughput Studies", but it's far too technocratic a title for the nature of what goes on here.

⁴See, for example, the work of David Monk and Emil Haller, particularly their 1990 study on the topic.

But, as Sher and Tompkins (1977) point out, Conant's data did not support even this modest claim for bigness. Conant studied 103 high schools, singling out 22 for detailed analysis. Only three of those 22 schools had graduating classes of 100 or fewer, an inadequate sample, Sher and Tompkins observe, from which to draw his central conclusion. Furthermore, Conant's three small high schools all ranked near or above the mean of all 22 schools on his overall index of performance. By his own account these were not inferior or substandard schools; they were average. (Indeed, Sher and Tompkins even speculate that Conant's central conclusion may well have been framed before he conducted the study.)

Conant's recommendation was predicated on the size one would need to be able to offer a rich enough curriculum to prepare students for college. Implicitly, it also assumed a 1950s information environment and 1950s level of teenage mobility, two factors that were to change dramatically in the ensuing years and greatly expand the learning possibilities of teenagers beyond the walls of the school building and the group instruction of the standard classroom.

Thirty years after Conant's study, Haller, Monk, Spotted Bear, Griffith, and Moss (1990) sought to determine if his notion of minimum size would stand up to one of the large data bases, the High School and Beyond Study, data unavailable to Conant. They looked at the comprehensiveness of course offerings in 481 standard four-year high schools. Haller et al. concluded that the comprehensiveness of smaller high schools' programs approximated that of larger high schools when their graduation classes approached 100 per year—Conant's 1959 observation. But, using their sophisticated system of course rating and counting, they also found that more than half of the schools graduating between 25 and 49 students per year were "nearly equivalent in comprehensiveness" (p. 113).

Conant's influence on the size of high schools is almost certainly overrated. The exigencies of the post-war baby boom and school administrators' growing fondness of business management practices during that era had already placed many of the huge high schools that would be built in the sixties on architects' drawing boards, if not actually on the meadows of America, before Conant's book was read by anyone.

The other classic study of the field is Barker and Gump's oft-cited *Big School, Small School* (1964), in which the authors raised questions about the efficacy of large high schools, most particularly in the area of student participation and involvement in the life of the school. Small high schools, they found, had much higher percentages of students involved in extra-curricular activities, a finding that has been replicated several times (see, for example, Lindsay, 1982). Over the years, a link of sorts has been established between a lack of participation in school activities and dropping out. Given that link, one might expect to find higher dropout rates in larger high schools than in smaller ones. That is the case. In summarizing the results of studies of dropouts, Pittman and Haughwout (1987) formulated the easy-to-remember generalization that the dropout rate of a high school increases by about one percent for every 400 students it adds to its enrollment.

Vandalism and violence are additional elements of the processes of schools. The levels of violence in our schools was a public concern long before the 1998 Columbine High School shootings. A recent report of the Departments of Education and Justice (Kaufman, Chen, Choy, Ruddy, Miller, Fleury, Chandler, Rand, Klaus, & Planty, 2000) portrays the degree to which one can expect to see higher incidences of violence against both students and teachers as school size increases. Michael Klonsky, of the Small Schools Workshop, commented on the findings (2000) on the Workshop's national listserve:

According to the study, incidents of violence and crime increase dramatically in schools with 1,000 or more students as compared with those of 300 or less. In urban schools with less than 300 students, for example, 3.9% of the schools reported serious violent incidents

compared with 32.9% of schools over 1,000 students. In other words, if we keep building big schools, we are increasing the chance of a Littleton [Columbine's city]-type incident by nearly 10 times.

Output Studies

In the early seventies, shortly after the testing movement began, a gradual shift began to occur in the nature of research on school size, particularly with the availability of large bases of state and national achievement data. Researchers had a new tool and as always they used it. Many of these studies took as their scope all of the schools in a state or hundreds of schools drawn from a national sample. For the first time we could answer at least in limited ways the question of how much was learned in schools of different sizes.

A number of large correlational studies have found consistent, low, negative relationships (of the order of $-.10$) between school size and achievement (Fowler, 1992; Fowler and Walberg, 1991); if school size had any relationship to achievement it slightly favored small schools. The relationship has held up even in a number of studies that have controlled for race and socio-economic status. That research first questioned the efficacy of large high schools and, in recent years, has begun to refute it. Lee and Smith (1996), to take a recent example, examined the relationship between school size and student achievement in 789 high schools nationally. They found that high schools of 600 to 900 students produced the highest achievement. Even smaller schools performed best when equity issues were considered. Indeed, a recurring finding that appears in these studies is that those students who have had the most trouble with school, the poor and the black, benefit most from very small high schools (Friedkin and Necochea, 1988).

Two general points should be made about this research. First, the tests that define the achievement that is being measured examine a limited range of our complex curricular goals; we know less about the relationship of size to more authentic forms of achievement. Second, and a point I will return to later, they aggregate two data sets for very small high schools that indicators suggest we should be examining separately: those schools of 400 or less that nevertheless struggle to emulate the long-established factory model of big high schools and those small schools, often under 200 students in size, which have been created in the last 30 years and are consequently better designed for today's adolescents and circumstances. These new, small high schools approach teaching and learning in very different ways and may use their small size to conduct a much more individualized and personalized program than is possible in the standard model of schooling, sometimes even described as "batch-processing" (Johnson, 1991, p. 3).

New York City has created well over 100 of these small schools in the last decade and some recent cost studies have begun to examine their merits. These studies sometimes look at both inputs and outputs, and occasionally even processes. Robertson (1995), compared two of these new, small high schools to one larger school. He suggests that if one computes the cost of a high school, not per student enrolled but per *graduate*, that these new, small schools make financial sense. To draw that conclusion, however, Robertson examined a set of quality of schooling processes, indicators critical to understanding what is going on in schools, in addition to cost data. A second, recent study of New York City's high schools, including its new small schools, makes the point even more unequivocally. Stiefel et al. (1998, 2000) examined the tradeoffs between individual school's budgets and their outputs, most centrally their graduation rates. Their final analysis included 133 high schools which met their conditions for completeness of data. They concluded that New York City's new, small high schools "cost among the least per graduate of all New York City high schools" (p. 1 of the 1998 citation). The small academic high schools' "lower dropout rates and higher graduation rates make their costs per cohort graduate very slightly *lower* than those for the large schools" (p. 10 of the 1998 citation, emphasis added).

Wasley et al. (2000) conducted a second, recent, large-scale study of the effects of school size in another major city. They examined the about 150 small schools—elementary, middle, and high schools—that Chicago founded between 1990 and 1997. They found that

Student attachment, persistence, and performance are stronger in small schools. Students in these schools have better attendance rates, significantly lower dropout rates, and higher grade point averages than do students in large schools. (from the study's Executive Summary)

The Misfit Between Research and Practice

Two ideas emerge from recent school size research. First, when only standard high schools are being considered, the optimal operating size for these schools is smaller than was previously assumed. For example, after reviewing 69 key studies of school size, Cotton (1996) concluded that a "large and quite consistent" research base points to an "appropriate and effective" size for standard high schools of 400 to 800 students (p. 10), figures she appropriated from another recent review of school size research (Williams, 1990). During the four decades since Conant conducted his study, the average high school has more than doubled in size, from 321 in 1959 (when Conant published his report) to 777 in 1998 (the latest data available). During that time the high school has come under increasing criticism for its ineffectiveness. How have we gotten to the place we are? Four forces seem to have come much more strongly into play, often in concert with each other, since our current conception of the high school was established. The forces, each of which contributes to the growing obsolescence of the large, comprehensive high school, are the onset of the information age, the emergence of an adolescent culture, the students' rights movement, and our changing views of the proper functioning of organizations.

These four forces have also prompted responses by some reformers that have resulted in the development of new forms of the high school that seem to work much more satisfactorily in today's context (Gregory, 1992, 1993). To better understand both the problems of big high schools and the solutions offered by these new, small schools we need to examine these four comparatively recent forces.

The Information Age

Our schools have been built on the presumption that their role in the culture was to enable the old to transmit the culture to the young. As long as the society was fairly stable the old knew almost everything that the young needed to know for the culture to survive. But as early as 1970 anthropologist Margaret Mead was pointing to the widespread erosion of this premise of our schools. She pointed out that nowhere in the world were there elders who knew what the children knew, no matter how remote and simple the societies in which the children lived.

In the past there were always some elders who knew more than any children in terms of their experience of having grown up within a cultural system. Today, there are none. It is not only that parents are no longer guides, but that there are no guides, whether one seeks them in one's own country or abroad. There are no elders who know what those who have been reared within the last twenty years know about the world into which they were born. (Mead, 1970, p. 61)

James Coleman (1972) discusses the challenge posed to our notions of schooling that are created by an environment in which information is everywhere. He describes the shifts that have occurred in our society in the century and a half since our schooling model was devised. Early nineteenth century agrarian America was, for the young, action rich but information poor. Adolescents on farms often functioned, at an early age, much as responsible adults did. But information, even in the form of printed matter, was scarce. *Telling* children about a world they could not know through any other means was a necessary teaching activity. A boy in the 1870s in rural Illinois could sit "awestruck, open-mouthed and incredulous as his teacher mentioned in passing that he had been on a train that had traveled 60 miles an hour." Our 180 degree transformation into an information-rich, activity-poor society has not been matched by a commensurate change in our schools. Coleman identifies two activities that must be emphasized in school which, in the past, have largely been accomplished outside of the school:

[F]irst, productive action with responsibilities that affect the welfare of others, to develop the child's ability to function as a responsible and productive adult; and second, the development of strategies for making use of the information richness and the information processing capabilities of the environment. (p. 75)

Consequently, he points out that other activities that have been central to schools, expansion of students' factual knowledge and cognitive skills, for example, must come to play an ancillary role.

It is not clear just what the shape of future schools will be, but they must not have as their primary goal the teaching of children. Anomalous as this principle may seem, it is the key to successful educational institutions of the future. The failure to recognize this principle is a major source of malaise in present schools. (p. 75)

The challenge to the high school is not just that information is so easily accessible in so many forms in the environment, but that the authority that once imbued adults because of their acquired knowledge carries less value as currency in today's school marketplace. That shift changes the status and role of teachers, a transformation that is difficult to respond to in the standard model of schooling.

The Emergence of an Adolescent Culture

Until the early fifties adults and teenagers shared the same culture, even listening to the same music. The rapid social change that occurred in the ensuing years began to set teenagers apart from adults. As the postwar pent-up demand for new cars began to be satisfied old models from the thirties and forties became available for next to nothing to teenagers. They began to live lives more separate from their parents than had previously been the case. Their emancipation expanded with time. Eventually the sexual revolution of "the pill" also extended down to teenagers, exacerbated by an age of the onset of puberty that was dropping about one year in each generation. The children for whom the high school had been created had been replaced by young adults (Botstein, 1997):

The blunt fact is that the American high school was designed for fifteen-to-eighteen-year-olds who were children only beginning their journey to adulthood. It is now filled with young adults of the same age. One does not have to subscribe to a Freudian theory of human development to accept the sharp distinction between the years before and after sexual development. And likewise, one does not need to be a professional psychologist to recognize that the way in which one deals with a prepubescent youngster is quite different from the way in which one deals with one in the early stages of puberty. (p. 83)

On top of all of these shifts in values and mores, drugs became readily available to middle class society, including its teenagers. They became yet one more experience that separated youth from most adults. Teenagers, who were very like their parents when the high school first evolved, had become strangers.

James Coleman (1987) points out that a very different relationship existed then between the old and the young. Authority was much more inextricably linked with financial dependence than it now is. As long as a child lived at home he was expected to mind the head of the household. Accordingly the schools that were created for the youth of that era expected youth to *mind*. As long as a high school education was a privilege in the society rather than a universal right, the high school could make minding adults a condition of participation. Gradually over the past few decades that fundamental relationship between the older and the younger generations has changed. In most families in the United States today, Coleman observes, a shift in the relationship occurs around age 14, in some families, much earlier. As today's children mature, minding adults begins to be replaced in most families by a form of negotiation. But our youth still attend high schools based on the idea that adolescents will mind.

The Students' Rights Movement

This mismatch between the institution and the youth it serves threatens the very future of public education. The anger and alienation felt by its most disenfranchised students may have always been endemic to the high school, but it has been exacerbated, first, by society's charge that the high school must educate and graduate *all* its students, an expectation that was in place long before it was codified in *America's Goals 2000*. The high school was no longer a privilege extended to those who had earned it. Asking a student who "wouldn't mind" to *leave* the school was no longer a viable response for administrators. This shift was quickly followed by a second complication, the development of case law in the sixties that clearly defined that students did indeed have significant rights. The authority of the high school to make youths mind was irretrievably trumped. Grant (1988) describes the sea change that occurred in one typical high school in the sixties as principals' wide ranging authority over students' behavior was emasculated by a series of Supreme Court rulings that defined the rights of students regarding speech, dress, and due process.

The evidence is widespread of the consequences that ensue as the high school attempts to maintain its traditional authority over youth. The most disenfranchised students act out in response to what they judge to be arbitrary, even inequitably enforced, rules of behavior (Brantlinger, 1993). The transformations that occur in these "disruptive" youth upon entering a small, informally-structured alternative school are also well documented. Jerry Smith's and my repeated observations of these overnight conversions from obstinance to cooperation finally led us to label large high schools as provocateurs of disruption (Gregory and Smith, 1987), a strong appellation even then, now magnified by the Columbine shootings. In 1975, this growing experience with the form of new, small high schools led a Senate subcommittee investigating juvenile crime and violence to recommend the development of many more small, informal alternative high schools to solve the problem (Committee of the Judiciary, 1975). Indeed, the successes of these schools with these students have mutated the very definition of "alternative school" over the years until now, in many states, it has come to mean, not a school of choice for all students, but a school *exclusively for* tough-to-teach students, a good place to send bad kids.

Our Changing Views of Organizations

Wheatley argues effectively that our notions of organizations (including schools) spring from a Newtonian view of the world. In designing our schools we have assumed that we could manage them by separating them into parts; that we could influence others, certainly students, as a direct result of force; that we could engage

in complex planning toward predictable outcomes; and that we could objectively measure and perceive the results of our work. Wheatley describes the growing dysfunction that has been occurring in organizations that continue to operate as though these ideas adequately represent how people now work together. She makes a strong case for conceiving our organizations around very different metaphors. Not only can we not separate A and B in an organization and operate on each independently, but even the "and" alters both of them. She promotes a view that organizations are at their most fundamental little more than relationships. The "ands" are what are most important.

Sergiovanni (1996), drawing on the work of Oakeshott (1975, cited in Elkin, 1993), argues that we use the wrong theories when we conceive the way a school should operate. He discusses two kinds of associations in our society: enterprise and civil.

Enterprise associations have formal goals. They require a layer of management whose job it is to decide the choice of means and to establish the structures needed to achieve these goals. Corporations are classical examples of enterprise associations. Civil associations, by contrast, do not have goals in a formal sense. They are, instead, settings within which members go about their self-determined pursuits guided by their subscription to norms of conduct that inform the decisions that they make. Families are classical examples of civil associations. . . . (p. 186)

Sergiovanni does not see schools as clear examples of either enterprise or civil associations, although he sees them as closer to being civil in nature. "The smaller schools get, the more they resemble families," he writes. "Likewise, the more successful schools are in becoming the kinds of learning communities we want them to be, the more they should approach the civil-association end of the continuum," (pp. 186-7).

What's Different About New, Small High Schools?

Many factors are certainly mediators of the impact of size on the day-to-day operations of schools. Some seem particularly important as explanations of the successes of the small high schools that are now being created. Issues of control seem to disappear in these schools; teachers tend to have equalitarian relationships with their students; and change is a familiar quality of their lives; they seem to be able to respond much more flexibly to new circumstances.

New Notions of Control

The manner in which concerns about control grow as school size does is certainly a factor (Sizer, 1984). I talk about the control issue at length in *Making High School Work* (Gregory, 1993). And, in *Small is Too Big* (Gregory, 1992), I consider the impact that control issues have on teaching and the problem of providing time for teachers to really teach:

[One] way to provide teachers time to teach is to reconceive the high school in ways that free teachers from their current custodial function. As long as students' time is scheduled tightly to keep them under control, teachers' time must also be scheduled tightly. To free teachers we must free kids. To free kids we must be able to trust them. To trust kids we must forge personal relationships with them that engender accountability. To foster high levels of personal accountability we must make high schools very small. (Gregory, 1992, p. 34)

Teachers as Smart Products

Small size enables a kind of personalized teaching that suggests an additional possible explanation for why small schools are effective. It centers on a concept appropriated from the world of marketing. Davis and Botkin (1994) discuss the concept of smart products, products or services that actually adapt themselves through their experience with their users. They give as an example a world-wide hotel chain that maintains a database of a customer's particular preferences for a room—non-smoking, hypoallergenic pillows, a particular breakfast that should be delivered to the room. Whenever that customer reserves a room, no matter where in the world, the database automatically frames the reservation in this way unless the customer wishes a different set of services. The organization has adapted to the individual. As schools become larger and more impersonal they become less and less able to view students as individual consumers. Indeed, the notion of students as consumers is quite alien to the very nature of the factory model of education that is part and parcel of bigness. Transforming a model of education that expects students to adapt *to it* into one that must adapt to *them* is proving difficult. To do so teachers must be able to receive and process even more information about at least some of their students—most of it from the students themselves—than they now can. The task is personal, not clerical in nature; it is challenging in a small setting, close to impossible in a large one.

How do we select what to pay attention to from so much noise? We use the lens of self. We, like all life, choose what to notice because of who we are. We use the process of *self-reference*. We are free to choose, but we choose on the basis of self. (Wheatley, 1999, p. 147; emphasis in original)

Teachers must see their role with students very differently than they can in factory model schools. If we are interested in serving students we must also know about *their* filters, their individual interests and desires, their selves. To do that we need to design the environment in ways that maintain relationships over long periods of time so that a small group of teachers can come to know a particular student *very* well. That knowledge is the key to the faculty's effectiveness. Teachers, in effect, become smart products. Many public high schools, most of which have been designed since this shift in relationships has occurred, already conduct business in this way (Meier, 1995; Gregory, 1993; Gregory and Smith, 1987a). Almost all of them are very small, often much smaller than those proposed as reform measures for large, comprehensive high schools.

An Organization that *Can* Change

Large, complex high schools with myriad specialized roles, extensive compartmentalization, and multiple layers of management and control, often resort to top-down strategies. Small schools, in contrast, often have very flat hierarchies. A small setting also enables teachers to know each other well. They can discover each other as colleagues (Wheatley, 1999). Because their numbers are relatively small they are more likely to have a conversation about new possibilities that holds the prospect of being persuasive and thereby extending the reform in new directions (Gregory, 1997). The closer the organization we're attempting to change is to Sergiovanni's (1996) concept of a civil association the more easily we can employ bottom-up strategies and persuasion can replace force.

Before it can change, a school must engage in a particular form of conversation, one that is very difficult to pursue with large numbers of people. So strongly is that the case that we seldom see it occur in those settings. Sergiovanni (1992) calls it the moral conversation through which a group of stakeholders explores questions such as, "What are we about?" and "How do we want to be in the future?" The Coalition of Essential Schools fosters this conversation through its Trek, a year-long, whole-faculty dialogue that

includes an intense, week-long retreat for a smaller, representative faculty group, (perhaps a tacit acknowledgment that the conversation requires a small enough group of participants). The ideas that are developed during Trek can produce useful, contemporary responses to *current* problems. The weakness of the process arises over time when the school's structure doesn't sufficiently support a faculty's *continuing* need for time to talk. Circumstances change in any school, even in a school that isn't attempting to change. Enterprise association schools have great difficulty maintaining what Sergiovanni calls the moral conversation as new events challenge established ideas of "what we are about." This ability to respond to the new is the epitome of learning organizations (Senge, 1990). They have built-in, self-correcting mechanisms that enable them to continue to respond to changing circumstances. Fullan (1993), too, repeatedly links this moral view to successful efforts to change.

Before teachers' unions and tenure laws, before students' rights, before the development of a teenage society and the universal social imperative of a high school diploma, schools could be enterprise associations in which those below obeyed those above them in the hierarchy. Even 50 years ago, when high schools were less than half their current size, a school might still have been expected to change by passing administrative edicts down through the ranks. Today, ideas and the processes through which they are developed must be persuasive as well as compelling. Teachers, parents, and probably even students must buy in and the *ongoing* processes of the school have to enable them to keep buying in as circumstances change and the school strives to develop new responses to them. Wheatley (1999) calls such capabilities "process structures—things that sustain their identity over time yet are not locked rigidly into any one physical form" (p. 17). The trick is to design schools that are not immobilized by change, that have a certain curiousness about newness.

High schools with these capabilities are almost always small. Indeed they seem to hit up against a size barrier when they try to grow too large (or start their lives too large). In my year at the Open School, then with an enrollment of 238 students, faculty conversations occasionally visited the question of whether they'd grown too large and were losing some of their effectiveness as a result (Gregory, 1993). Debbie Meier (1995), former leader of one of our most successful school reforms, has commented on a mistake her planning group made in creating Central Park East Secondary School, what most would call a small high school. "(If we had it to do over again we'd have been even smaller—with no more than 300 students—so that the entire faculty could more easily meet together to talk things out)" (p. 36)

A Logical Response: Make Big Schools Small

Other factors likely play a role in the effectiveness of small schools but central to this paper is the idea that, throughout this discussion, two different notions of "small" are being promoted. One is put forth by those creating new, small schools, schools that often have a distinct culture based on principles rather than rules, with flat hierarchies that may have a head teacher rather than a specialist principal. Students in them may have very individualized programs of study and often spend significant portions of their time working outside of the school. (Small size becomes a handicap when one attempts to continue to confine all learning within the walls of the school building.) These schools have a different set of problems from those encountered in big schools; control issues disappear; friction and animosity between cliques disappear because cliques do (Gregory and Smith, 1987). And these new, small schools go about solving the problems that they do encounter in very different ways. Of particular interest here is that they tend to begin to encounter *new* problems if they grow too much. After watching a number of these schools, I've come to think of the upper limit of their effective size as being somewhere around 200 students.

The second notion of "small" comes out of the experiences of large, comprehensive high schools. Most of the proposals, for example, for breaking big schools up into smaller entities set as a goal schools of 400 or 500 students (Chira, 1993). *Breaking Ranks* (National Association of Secondary School Principals, 1996), a widely-used manual for breaking up big schools suggests a maximum of 600 students. One might ask why these numbers, particularly given the "cultural wall" that very small schools seem to hit as they grow much beyond 200 students? I think it may be because most of these proposals are not attempts to change the *form* of schooling. Rather they are more modest efforts to personalize a familiar model which is fundamentally impersonal in nature. Consequently, their concept of small is far too big to accomplish much more:

The problem with high schools of 500 students is that they still function as big schools. It is in this sense that small is too big. High schools of 500 students still tend to be governed, though to a diminished degree, by the control issues that dominate big high schools. Many students are still anonymous enough to evade personal responsibility for their actions and therefore still cannot be trusted, a fundamental prerequisite of any school that strives to give students more control over their education, to treat them more as adults. (Gregory, 1992, p. 5)

A size of 400 or 500 students makes sense only if one's intent is to continue to conduct business as usual, a routine of textbook-dominated classes that are designed to dispense a curriculum that emphasizes the transmission of information from the old to the young via group instruction delivered within the confines of the school building. Mary Futrell, former president of the National Education Association, has aptly called this concept the two by four by six school, an education confined by the two covers of the textbook, the four walls of the classroom, and the six hours of the school day.

One strains to find examples of this sort of reform that might be called successful, even though hundreds of high schools have pursued this strategy. I strongly believe that if even one existed it would be highly publicized, every bit as much as Central Park East Secondary School in East Harlem has.Sizer discusses the issue in *Horace's Hope* (1996), in the end calling the American comprehensive high school a "profoundly misdesigned" institution (p. 105). He intimates that we may not have given the idea of breaking big schools up into small ones enough time, that it will take longer. His observation may be accurate if the fundamental premises of these efforts are sound. Understanding why these many reform efforts seem to be floundering may inform us about the particular potency of school size as an enabler of desired programmatic reforms. If the central intent of these breakup efforts is to simply create more personal forms of the familiar factory model many of them may have already achieved a certain success, but the goals of these efforts suggest more; they seek a cultural renaissance, not a remodeling (National Association of Secondary School Principals, 1996). They share the values and aspirations imbedded in the new, small high schools that have developed in the last 30 years. A central problem is that we build characteristics into the basic design of most of these breakup efforts that make it impossible for them to cross over into the world of successful small schools. Five types of error are particularly evident—errors of size, of continuity, of autonomy, of time, and of control—and they bar big high schools from traversing what might be called a no-man's-land of high school size (about 200 to 400 students) that would enable them to respond effectively to their ambitious goals.

Errors of Size

In breakup efforts, schools within schools (SWASs) are regularly designed as administrative units. Perhaps because they are usually designed by administrators, they tend to be designed *for* administrators. We make them big enough—400 to 600 students—to justify a principal, for example. The faculties of each SWAS,

consequently, are large enough—25 to 40 teachers—that they have almost as much trouble talking to each other as large high school faculties do. The problem then becomes designing a mechanism within which the vision of the new school can be socially constructed. Because hard conversations about things that matter are very difficult in a group so large, faculties typically revert to strategies that have been used for very large schools: either the vision is created by the principal and teachers are expected to go along with it, or some sort of representative governance council is created, and everyone is expected to go along with its recommendations. The vision that is created under either of these circumstances has to be very persuasive or very familiar if people are to be expected to fall in line. The latter often proves to be the case.

Errors of Continuity

Large high schools sometimes break themselves into horizontal strata rather than vertical streams. Some observers have suggested, quite rightly, that there are three kinds of students in any high school: those who are beginning the program and have a special set of orientation and acclimation tasks before them, those who are in the end game, scrambling to complete their requirements for graduation and laying their plans for life after high school, and those who are somewhere in the amorphous middle ground between these two transitional experiences. In a model based on specialization, a natural response to these conditions is to create specialized programs for each of these groups. We may segregate incoming freshmen off into a special program or create a senior semester or senior institute. But each of these smaller experiences then has its own transitions that must be accomplished. Of more concern is the manner in which these configurations segregate older students from younger ones. They are predicated on the ages-old idea that only the older generation can teach the young what they must know to succeed (Mead, 1970). The result of all this programmatic segmentation is that just as students acclimate and establish themselves in a new setting, they are asked to move on. Just at the time when they become valuable teachers and leaders of those younger than themselves, we remove them to a new setting in which they are once again an off-balance beginner. It would make much more sense to create intact, autonomous schools in which both adults and older students share the task of acclimating and teaching younger students, but such schools by definition must have a degree of autonomy, an outcome that works against other goals of big high schools.

Errors of Autonomy

An oft-stated goal of these breakup efforts is that the former, big school with all its traditions will remain. It is often couched as a reassurance to the community: interscholastic sports, the prom, the yearbook, the marching band will all continue as they always have. These entities are, of course, the very—arguably the only—cultural artifacts that still bind together all the disparate pieces of big, anonymous institutions. Mixed allegiances are difficult to maintain. The long established big school culture tends to kill off the nascent small school cultures. Some services—counseling, discipline, food service—may also remain centralized, either to nurture the big school identity or its notions of specialization or to achieve economies of scale in the big building's infrastructure. Because each of these services remains a task of specialists each tends to become depersonalized and remote from the more local lives of each SWAS. Eating together, a hallmark of many communities, occurs somewhere else with other people. Something as intensely personal as a counseling session, perhaps occurring at a time of great personal crisis, occurs on someone else's turf, with a relative stranger. A cultural artifact of new, small high schools is the manner in which they eliminate specialization. For the more mundane forms of teenage angst, every teacher becomes a counselor of his or her academic advisees. The food that all will share at lunch may be prepared by students, perhaps as a legitimate part of the academic program (Gregory, 1993).

Errors of Time

Continuing to offer esoteric electives across all SWASs is an attractive option in these broken-up configurations. It is seen as a way to maintain the best of both worlds: the rich curriculum of a large, comprehensive high school and the more personalized environment of a small school. To accommodate movement between SWASs, they often adopt a common structuring of time, a common bell schedule. But the bell schedule makes it difficult to do much programmatically that's different from what the big school was able to do. It may, for example, make it difficult for an individual student or a group of students to leave the campus for one day, to pursue learning in the community, let alone for a week or longer. Responding spontaneously to unexpected learning opportunities—whether it's a visiting author or a full solar eclipse that will be visible in a nearby state—is almost as remote a possibility for the SWAS as it is in a large, comprehensive high school.

In traditional time frames, traditional notions of faculty load are maintained. For example, powerful advising programs that go hand-in-hand with high levels of independent learning become difficult to justify. Teachers in such settings tend not to be seen as *teaching* when they are working with individual students.

Errors of Control

That big schools have so little independent learning occurring in them is not accidental; such independence is antithetical to the levels of control that must take primacy in them. Adults, even some teachers, are uneasy when in the presence of even a few adolescents (Sizer, 1984). Confining so many in one place, as we do in a big high school, creates a setting that is uncomfortable for most of the adult community, one that quickly becomes scary if not kept under tight control. (Because of this community sentiment, any big school that *has* managed to relax its level of control, perhaps by breaking itself up into small, autonomous entities or allowing students off campus at times during the school day, may be only one incident away from quickly reverting to form.) Freedom of movement is a necessary prerequisite to many powerful forms of learning. Students must be well-known and trusted if such freedom is to be possible. Even much smaller SWASs still have the problem of their students remaining strangers when they move elsewhere in the building. Because many of the control problems of big schools remain in a big building, many of the control issues that also constrain more informal teaching and learning also remain. They emasculate the programmatic efforts that become possible only when students have higher levels of freedom and control over when, where, and with whom their learning takes place.

The No-Man's-Land

Big schools, too, seem to hit a size barrier when they attempt to become smaller; they seem to have difficulty conceiving themselves as entities smaller than about 400 students. It may be more accurate to term it a cultural barrier—the point at which teaching and learning behavior must change significantly to remain effective—but the effect is the same. Changing our thinking about these places enough to allow them to become fundamentally different institutions than their large former selves may not be a realistic possibility. Considering this big school barrier in combination with the previously discussed small school barrier defines a no-man's land of sorts that we might do well to respect in our efforts to reform the high school. Even though hundreds of high schools of 200 to 400 students have functioned and many continue to function, and even though some research suggests that they do so relatively effectively, they seem to be a place that few educators want to go, perhaps because they are seen as being neither fish nor fowl *culturally*. Historically, high schools of this size have tended to be rule-based institutions almost as much as their bigger brethren

have. If Wheatley's analysis (1999) is correct, our future lies in institutions based on principles and relationships, not on rules, the domain of very small high schools of less than 200 students.

Getting Reform Right

Reform is devilishly difficult to pull off, even under the most favorable of circumstances. When we don't have a clear sense of our goals or broad agreement on them we can have little hope of accomplishing much. If our goals are clear but the organizational forms we select to achieve them are ill-chosen we set ourselves up for frustration and failure. If our conception of a proper organization no longer fits our circumstances we may never come close to our goals. The analysis presented here is one attempt to clarify some of these problems at the operational level in the context of the high school. It attempts to explain at least some of the reasons why so little of our widespread effort to reform the high school has been successful and it suggests remedies, uncomfortable as they may be, that hold the promise of rectifying the situation.

Our goals for the high school will probably never achieve anything resembling a national consensus, a problem yet to be confronted by the politically-driven standards movement. Achieving even a community-wide consensus seems remote in many settings, but it may be that we don't need to. Trying to impose a set of goals, what Haller et al. (1990) term "hard reform," does not appear to be a winning strategy. One of the reasons that the factory model doesn't work very well any more is that it relies on this kind of top-down forcefulness. Force no longer works as effectively as it once did, with students or teachers; the more powerful can no longer set the agenda for the less powerful and expect them to just comply. If our future lies, as I certainly think it does, in the development of many very small high schools as replacements for any one large high school, variety can be encouraged among them, including variety in their goals. If citizens have choices between a variety of schools a process of natural selection can gradually eliminate our less successful attempts as parents and students vote with their feet. I don't want to appear a Pollyanna about choice; it is not a panacea (Goldhaber, 1999). But in a world in which force no longer works what other strategy do we have? And for some time to come—almost certainly for at least a generation—a reassurance to many will be that one of those choices will be a scaled-down version of the familiar comprehensive high school.

Also, we must do a much better job of matching the form of the organization to our goals and to its clientele if we hope to successfully achieve this rich variety. We have to establish a more sophisticated understanding of school size. Those who continue to advocate breaking big schools up into smaller pieces need to justify the strategy on stronger grounds than that it is a reasonable, incremental approach that acknowledges the reality of all these huge buildings we're erected. The current, popular, incremental approach envisions that small comprehensive high schools are a workable goal in much the way that the colonial Puritans conceived children as little adults. To get to the size at which smallness enables effectiveness such incremental reforms must traverse a no-man's-land in which neither the factory model nor new forms of schooling work very well. Increasingly, the strategy of breaking big high schools up into small pieces is remindful of the man in the joke who has lost his keys on a dark street and looks for them under a street lamp, not because he lost them in that vicinity but because the light is better there. Change is not going to be convenient.

Lastly, we must establish a moratorium on the construction of yet more large high schools or increasing the size of those that already exist. We impose what we already know to be a mistake on at least another generation of youth every time we make either decision. As an alternative, school districts might do better to foster ongoing conversations among like-minded teachers, parents, and students that could lead to

new visions of the high school. As enrollments grow they can trigger the piecemeal construction of a succession of small buildings that allow each of these groups, in turn, to realize its vision.

The good news is that the models of what we must create already exist. They embody a set of relationships, including power relationships, between the old and the young that rarely exist in large high schools. They've proven their success with today's students in today's societal circumstances and with today's funding levels. It's time to start learning from their experience.

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